UTILITY PATENT APPLICATION TRANSMITTAL

Attorney Docket No.	1431/USW 0391 PUS
First Named Inventor	Russ L. Albert

1. This application entitled <u>INTERNET-BASED DATABASE REPORT WRITER AND CUSTOMER DATA MANAGEMENT SYSTEM</u> is:

    a. <u>X</u> A new application under 37 C.F.R. §1.53(b).

    b. ___ A ___ continuation ___ divisional or ___ continuation-in-part application under 37 C.F.R. § 1.53(b) of prior application Serial No. ___/_____ filed on _____,
    entitled _____.

    Application elements and other attached papers:

2. <u>X</u> Specification   [Total Pages <u>16</u>]

3. <u>X</u> Drawings (<u>X</u> informal ___ formal)   [Total Sheets <u>2</u>]

4. ___ Oath or Declaration

    a. ___ Newly-executed

    b. ___ Copy from a prior application (37 C.F.R. § 1.63(d))

5. ___ Incorporation By Reference: The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Item 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ___ This application is filed by fewer than all the inventors named in the prior application, 37 C.F.R. § 1.53(d)(4).

    a. ___ **DELETE** the following inventor(s) named in the prior nonprovisional application:

    _____
    _____

    b. ___ The inventor(s) to be deleted are set forth on a separate sheet attached hereto.

CERTIFICATION UNDER 37 C.F.R. § 1.10

I hereby certify that this UTILITY PATENT APPLICATION TRANSMITTAL and the documents referred to as attached therein are being deposited on the below date with the United States Postal Service in an envelope as "Express Mail Post Office to Addressee" addressed to: Assistant Commissioner for Patents, Box Patent Application, Washington, D.C. 20231.

Express
Mail Label No. <u>EI 407 992 289 US</u>

Date of Deposit: <u>December 31, 1997</u>

<u>Angelika S. Phillips</u>
(Type or print name of person mailing paper)

Angelika S. Phillips
(Signature of person mailing paper)

B&K0005/9712

7. Preliminary Amendment:

    a. ____ A Preliminary Amendment is attached.

    b. ____ Cancel in this application original claims _____ of the prior application before calculating the filing fee.

    c. ____ Please amend the specification by inserting before the first line the sentence:

        "This is a

        ____ continuation

        ____ divisional

        of copending application(s)

        ____ Serial number ____ /_____ filed on _____."

    d. ____ A Petition to Suspend Prosecution For The Time Necessary to File An Amendment (New Application Filed Concurrently) is attached.

8. Small entity status:

    a. ____ A small entity statement is attached.

    b. ____ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.

    c. ____ Is no longer desired.

9. Fee Calculation:

FOR	NUMBER FILED	NUMBER EXTRA	RATE	CALCULATIONS
TOTAL CLAIMS (37 C F R § 1 16(c))	12 −20 =		X 22.00	− −
INDEPENDENT CLAIMS (37 C F R § 1 16(b))	2 −3 =		X 82.00	− −
MULTIPLE DEPENDENT CLAIMS (if applicable) (37 C.F.R. §1.16(d))			270.00	
			BASIC FEE (37 C.F.R. § 1.16(a))	790.00
		Total of above Calculations =		790.00
Reduction by 50% for filing by small entity (Note 37 C.F.R. §§ 1.9, 1.27, 1.28)				
		Assignment Recordal Fee	40.00	
			TOTAL =	790.00

10. ____ A check in the amount of $_____ is enclosed.

11. _x_ The Commissioner is hereby authorized to credit overpayments or charge the following fees (or any deficiency therein) to U S WEST, Inc. Deposit Account No. _21-0456_:

    a. _x_ Fees required under 37 C.F.R. § 1.16.

    b. _x_ Fees required under 37 C.F.R. § 1.17.

12. Maintenance of Copendency of Prior Application

    ___ A request for extension of time and the appropriate fee have been filed in the pending **prior** application (or are being filed in the prior application concurrently herewith) to extend the period for response until _____.

13. ___ An Information Disclosure Statement (IDS) is attached, along with the following indicated attachments thereto:

    a. ___ Form PTO-1449 (_____ sheet(s))

    b. ___ Copies of references cited

14. ___ Certified copy of priority document(s)

15. _X_ Return Receipt Postcard

16. ___ Other: _____
_____

17. ___ An Assignment of the invention to <u>U S WEST, Inc.</u>_____
_____

    a. ___ is attached with an Assignment Recordation form.

    b. ___ was recorded on _____ at Reel _____, Frame _____.

18. The power of attorney in the prior application is to:

_____

Name of Attorney of Record   Reg. No.

    ___ The power appears in the original papers in the prior application.

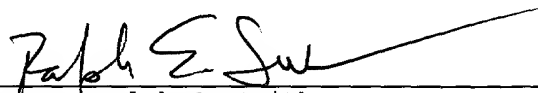   ___ The power does not appear in the original papers, but was filed on _____.

    ___ A new power has been executed and is attached.

19. Correspondence Address: Please address all future communications to:

    <u>Judson D. Cary</u>_____,
    U S WEST, Inc.
    7800 East Orchard Rd., Ste. 490
    Englewood, CO 80111
    Telephone: 303-796-6013
    Facsimile: 303-793-6563

Respectfully submitted,

Date <u>December 30, 1997</u>

Name: Ralph E. Smith
Registration No.: 35,474

    _X_ Attorney or agent of record
    ___ Filed under Rule 34(a)

B&K0005/9712

INTERNET-BASED DATABASE REPORT WRITER AND CUSTOMER DATA MANAGEMENT SYSTEM

Technical Field

5 The present invention generally relates to processing of customer billing and inventory information, and more particularly to improvements which allow customer access to such information via an Internet based connection.

Background Art

10 Generally, the dramatic growth in use of the Internet has created greater opportunities for service providers to introduce new services to customers which are tailored to take advantage of the increased speed and efficiency offered by the Internet.

15 One such area involves processing of customer account data relating to services rendered, and generating associated billing reports for each customer. Of particular concern to the present invention is providing access to customer billing and
20 inventory data to users located both in and outside a service provider such as a telephone company.

To date, processing and billing arrangements rely on traditional mailing of hardcopy bills to customer premises, and automated telephone and service
25 support staff to allow users access to billing and inventory data. As such, known arrangements have not otherwise tapped the potential for increased

efficiency and convenience offered by a graphical user
interface (GUI) via the Internet. Alternative
arrangements have been introduced, but are typically
packaged on a CD-ROM or diskette and are severely
limited in capabilities to provide enhanced customer
service. In other words, these known arrangements do
not provide any drill down capability, entry of
customer data, or comprehensive database access and
management.

Disclosure Of The Invention

It is therefore an object of the present
invention to provide a database report writer and
customer data management system and method which
increases convenience and efficiency of user access to
billing information.

It is another object of the present inven-
tion to provide a database report writer and customer
data management system and method which allows user
access via the Internet using a GUI.

It is yet another object of the present
invention to provide a database report writer and
customer data management system and method which
allows a user to customize and save report
definitions.

It is a further object of the present inven-
tion to provide a database report writer and customer
data management system method which allows direct on-
line user access to billing and other related customer
information to provide the ability or opportunity to

eliminate the need for mailing of hardcopy billing
reports.

5   In accordance with these and other objects,
the present invention provides a database report
writer and customer data management arrangement for
convenient on-line access, such as via the Internet,
to customer billing and inventory data. With the
present invention, a user can analyze billing data for
fraud control, internal auditing, inventory
10   management, and cost accounting using an Internet
browser and Internet capable computer terminal.
Analysis is done by creating report definitions
specifying the database data to display, sort,
total/count, group, and selectively filter.

15   In accordance with a further aspect of the
present invention, users can create custom database
tables and input their own data therein. This data
can be displayed in reports along with billing and
inventory data. As a result, the present invention
20   provides the ability to eliminate traditional hard
copy reports such as a paper telephone bill mailed to
each customer premise.

The above objects and other objects, fea-
tures, and advantages of the present invention are
25   readily apparent from the following detailed descrip-
tion of the best mode for carrying out the invention
when taken in connection with the accompanying draw-
ings.

Brief Description Of The Drawings

FIGURE 1 is a block diagram of an Internet based database report writer and customer data management system in accordance with the present invention;

FIGURE 2 is a block diagram illustrating the overall process of the report writer in accordance with the present invention;

FIGURE 3 is a block diagram of a view editor in accordance with the present invention; and

FIGURE 4 is a block diagram of a data manager in accordance with the present invention.

Best Mode For Carrying Out The Invention

Referring to Figure 1, an Internet based database report writer and customer data management system 10 in accordance with the present invention includes suitable programming to operate in conjunction with available Internet-type browser software. At least one customer/end user terminal 12 is connected to a host site 14 via a suitable Internet link on-line access 16.

In accordance with the present invention, an end user 12 can obtain from the host site one or more reports containing customer information stored in a database 18. In the preferred embodiment, such information relates to billing and other related customer data. In addition, interfacing between the

host site and an end user is preferably done using
JAVA applets and HTML pages or equivalents thereof.
However, this is not to be construed as limiting since
the present invention can be used with any information
5   delivery format capable of supporting a GUI type
interface. As noted above, each user can access the
views and reports using a conventional Internet
browser.

        The host site 14 includes front-end
10   processor 20 for interfacing with the end users via
the Internet connection. Front-end processor 20 can
be implemented using any suitable web server hardware
or other microprocessor based central terminal. The
front-end logic generally operates to collect and
15   transmit session information through the use of JAVA
applets and HTML forms described below.

        Figure 2 illustrates the overall process of
a database report writer and customer data management
arrangement 100 in accordance with the preferred
20   embodiment. User access to arrangement 100 is
provided through a main GUI type web page interface
100. From this interface, the user can use access a
view manager 102 hereinafter referred to as "Work with
Views," or a data manager 104 hereinafter referred to
25   as "Work with Data."

        The Work with Views manager 102 is arranged
to provide a graphical display of a list of the views
a user can work with along with a set of function
commands which can be used to manage the views. A
30   "view" is a graphical container that stores a report
definition. A report definition can be edited or

created using a view editor 106 described in more
detail below.

Using the Work with Views manager 102, a
user can delete, run, create, edit, define a run-time
5   filter for, extract data from, or determine the cost
of running a view by selecting one of the set of
predefined commands such as by double clicking with a
mouse or similar input device associated function
buttons graphically displayed on the Work with Views
10 page.

The set of predefined commands provided by
Work with Views manager 102 includes a directory tree
type expand command 108 which expands a view by
listing the reports stored therein. A delete command
15 110 is provided for deleting a view, which
automatically deletes all reports contained therein,
or an individual report within a view.

A run command 114 for running a view causes
a table of contents to be displayed showing a list of
20 all the reports contained within a selected view.
Selecting a report from this list causes the report to
be displayed in a predetermined area of the user
display page.

A View Editor 106 allows the user to create
25 new reports or edit existing ones. An edit command
112 is provided for selectively launching an
uninitialized View Editor, or an initialized View
Editor containing the definition of the report to be
generated.

More specifically, in the preferred embodiment, the View Editor 106 is an Internet based editor for defining report templates to selectively control the fields of data stored in an Oracle

5 database table to be displayed in a particular report. Such database tables are commonly employed for storing customer data, and are not suitable for direct Internet access by a user. As further described, the View Editor 106 allows for customization and storing

10 of unique report definitions, i.e., views, thereby providing flexibility in viewing the content of Oracle database tables over the Internet. Flexibility and ease of use allow an end user to produce accessed reports locally at a user terminal 12 without the host

15 site, i.e., the billing information or service provider, having to generate a plurality of custom programs which create the reports for each end users.

View Editor 106 is arranged in accordance with known programming code to operate within an "off

20 the shelf" Internet browser. View Editor 106 allows the user to define a format and content of a report containing data from Oracle database tables. The user selects the fields or types of data to be generated in a report by choosing the desired columns from a list

25 of database tables, such as titled "Business Data," that are to be added to a report. The column(s) can be added before or after a column has already been added to the report, or added as the first or last column in the report. Appropriate commands are

30 provided to indicate where to add the column, i.e., first, last, before, or after.

Data from more than one database table can

be included in the report by simply scrolling through a list of database tables displayed in the web page interface and selecting a column from the available table(s). If selected, the tables will be joined when
5   the report is executed.

Referring now to Figure 3, the View Editor 106 includes a plurality of command selections for implementing desired editing functions. These plurality of commands include a Data Item command 200,
10   a Drill Down command 202, a Level command 204, a Sort command 206, and a Total command 208. In addition, an add command function 210 is provided to add selected columns to a report.

The drill down command 202 allows the user
15   to identify which report to drill down to when the report is run. When the drill down command is selected, a list of views and corresponding reports within those views is displayed. The user selects the view or report to be drilled down.

20   The level command 204 is provided to allow grouping of data in the report. Level command 204 is used to launch a Detail command 212, a Group command 214, and a Grp+Det command 216 to allow a selected column to be used as a grouping column. This will
25   cause a group line to be inserted in the generated report every time the value of the column changes. The group line will contain all columns assigned a level of "Group."

The report can also contain both group lines
30   and detail lines. This feature is selected by

launching Grp+Det command 216.   The grouping function
of level command 204 is disabled by launching Detail
command 214.

        Sort command 206 provides sorting of a
selected column in either ascending or descending
order.   Total command 208 is used to total numeric
columns or count nonnumeric columns.   Launching this
command causes the word "Total" to be graphically
displayed if the column is numeric, or the word
"Count" if the column is nonnumeric.

        Headers and footers can be selectively
created by entering text in predetermined entry fields
located above and below the scrollable viewing area.
The header will appear near the top of the report and
the footer at the bottom.

        In further accordance with the present
invention, accessing a simple filter editor 218 allows
quick and easy creation of a report content filter.
More specifically, editor 218 is formed as a selection
window for entry of custom filter values which operate
as a threshold for comparison with database columns to
selectively control which database rows will be
included in a report.   The filter created using the
simple filter editor is preferably displayed
graphically, such as in a window box titled "Business
Data Filter."

        For more complex filtering, a complex filter
editor 220 can be accessed.   The filter created using
complex filter editor 220 is also preferably displayed
in the box titled "Business Data Filter."

After editing is complete, the user can then save the view or report. Once saved, a user can generate and receive a report using the saved view to access the desired data currently stored in the Oracle database.

A filter can be defined before running a report if the user wants to limit the amount of data a report will contain, such as by limiting the report to a particular date. Thus, the filter provides a mechanism for reducing the size of a report.

Referring again to the Work with Views manager 102, extracting a view or report causes all the data that would be contained in the body of the report(s) if generated to be downloaded to a file on the user's workstation. Copying a view or report allows the user to copy an existing view or report.

The cost of a running a view or report is determined by the amount of data contained therein if the report were to be generated. Launching this command preferably causes a window to be displayed containing this information.

The Work with Data manager 104 displays a current listing of custom database tables created by the user along with a set of function commands used to manage them. The user can insert data into a database table, delete data from a database table, delete an entire database table, browse an existing database table, or create a new database table.

More specifically, as shown in Figure 4, a

table delete command 300 causes the table contents to be deleted as well the table definition itself. An insert command 302 allows insertion into a database table by entering a value for each column of the

5   table. A browse command 304 causes a window to be displayed showing the contents of the database table. A row of the table can be selected for updating or deleting.

A create command 306 allows creation of a

10   new table. The user enters a database table name and the name, type of data, length of data, and the number of decimal places (for numeric data) for each column of the database table being created.

Work with Data manager 104 allows a user to

15   relate the customer billing and inventory data with data the customer provides and maintains. For example, a customer may use particular cost accounting codes which are assigned to particular telephone numbers to track telephony expenses. If a cost

20   accounting table were created containing these codes along with the corresponding assigned telephone numbers, the customer could display this information along with the telephone numbers in a report. Alternatively, the telephony charges could be totaled

25   using the assigned cost accounting, thereby allowing the customer to view billing data using the cost accounting codes as identification terms rather than the telephone number listed in the normal report.

While the best mode for carrying out the

30   invention has been described in detail, those familiar with the art to which this invention relates will

recognize various alternative designs and embodiments
for practicing the invention as defined by the follow-
ing claims.

What Is Claimed Is:

1.   A system for generating an on-line report containing user billing and inventory information comprising:

5   a host site connected to at least one user computer terminal via an on-line interconnection, said host site comprising a database for storing the user billing and inventory information, and a processor terminal connected to the on-line interconnection for

10   receiving user report requests and sending reports created in response to the received requests and additional on-line user input, wherein said processor terminal comprises:

          a view manager arranged to generate a set of

15   function commands which can be selectively launched by user input to: graphically display a list of available views each of which contains a report relating to particular user information stored in a database, create a new view and report, and edit a view and

20   report; and

          a data manager arranged to allow input of user defined data for insertion into a requested report.

2.   The system of claim 1 wherein said view

25   manager comprises a view editor arranged to receive and implement user report editing instructions.

3.   The system of claim 2 wherein said view editor comprises a plurality of editing commands which are graphically displayed in the graphical user

30   interface.

4.   The system of claim 3 wherein said plurality of editing commands comprise a drill down command, a grouping command, a sort command, and a total amount command.

5.   The system of claim 1 wherein the view manager further comprises a report filter arranged to receive user defined filter values for use as threshold values to selectively control which database information will be included in a report.

6.   The system of claim 1 wherein the on-line interconnection comprises an Internet connection and web browser.

7.   The system of claim 1 wherein the graphical user interface comprises JAVA applets and an HTML page.

8.   A method for generating an on-line report containing user billing and inventory information in response to an inquiry from a user computer terminal via an on-line connection, said method comprising:
generating a graphical user interface for on-line access by the user, said graphical user interface providing a set of function commands which can be selectively launched to: graphically display a list of available views each of which contains a report relating to particular user information stored in a database, create a new view and report, edit a view and report, and allow input of user defined data to be inserted into a report;
creating a report based on user responses to

the set of commands; and

         sending the created report to the user terminal via the on-line connection.

        9.   The method of claim 8 further comprising providing report editing commands which can be accessed through the graphical user interface to specify desired data to be produced in a report.

        10.   The method of claim 9 further comprising providing report editing commands which can be accessed through the graphical user interface to specify a desired report format.

        11.   The method of claim 9 further comprising providing report editing commands which allow on-line user control of display, sorting, accounting, and grouping of report content.

        12.   The method of claim 9 further comprising providing report editing commands which allow a user to input content filtering constraints to limit the quantity of user information produced in a report.

Abstract

A database report writer and customer data
management system and method provides a GUI type
interface to allow users convenient on-line access,
5 such as via the Internet, to customer billing and
inventory data in the form of an on-line report. The
present invention facilitates on-line creation of
report definitions which specify desired data to be
produced in a report, and other parameters relating to
10 display, sorting, accounting, grouping, and filtering
of report information. The present invention also
allows users to create custom database tables and
input their own data for display in reports along with
billing and inventory data. As a result, the present
15 invention provides the ability to eliminate
conventional hardcopy reports typically produced in
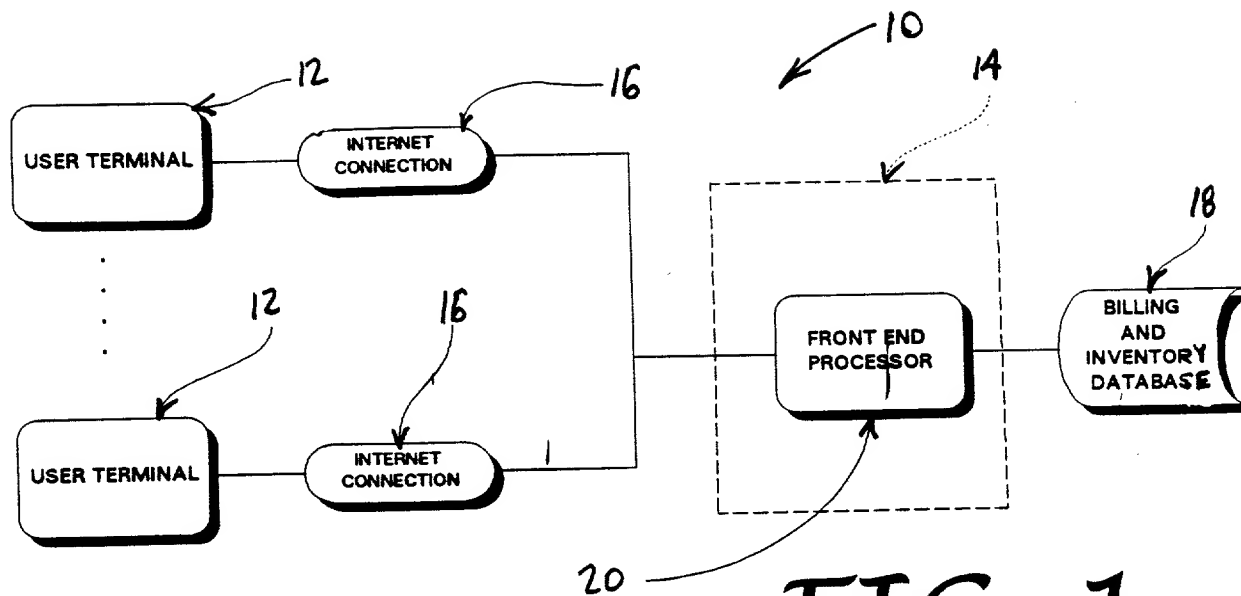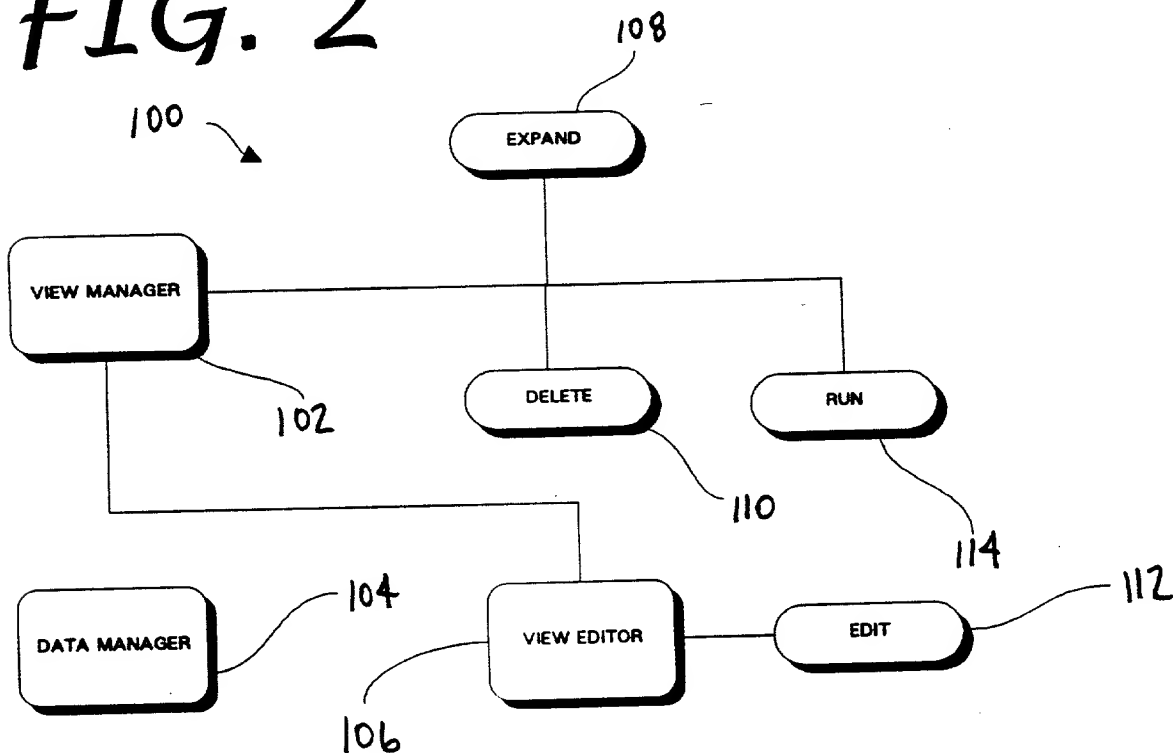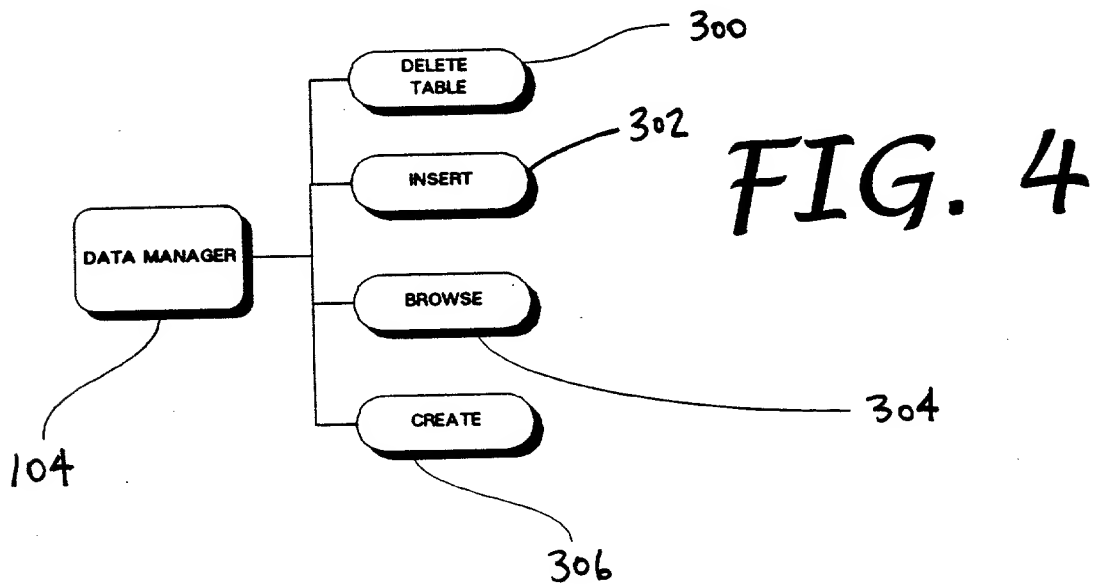the form of a billing statement.

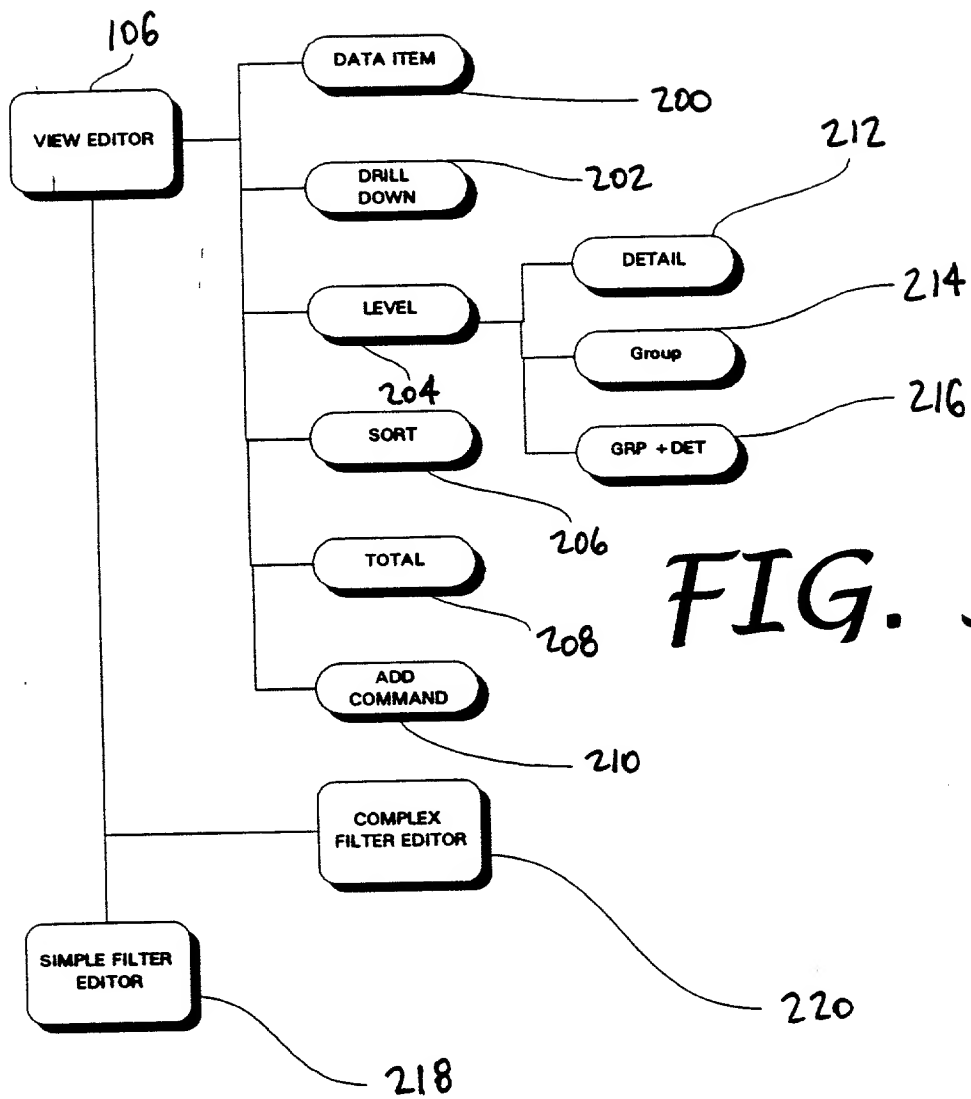USER TERMINAL — 12
INTERNET CONNECTION — 16

USER TERMINAL — 12
INTERNET CONNECTION — 16

10

14

FRONT END PROCESSOR

BILLING AND INVENTORY DATABASE — 18

20

FIG. 1

FIG. 2

100

EXPAND — 108

VIEW MANAGER — 102

DELETE — 110

RUN — 114

DATA MANAGER — 104

VIEW EDITOR — 106

EDIT — 112

FIG. 3

VIEW EDITOR — 106

DATA ITEM — 200

DRILL DOWN — 202

LEVEL — 204

DETAIL — 212

Group — 214

GRP + DET — 216

SORT — 206

TOTAL — 208

ADD COMMAND — 210

COMPLEX FILTER EDITOR — 220

SIMPLE FILTER EDITOR — 218

FIG. 4

DATA MANAGER — 104

DELETE TABLE — 300

INSERT — 302

BROWSE — 304

CREATE — 306
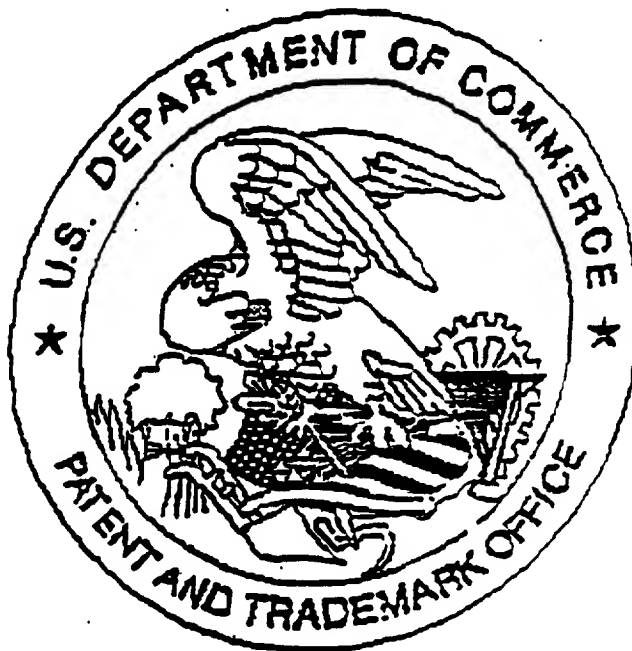
United States Patent & Trademark Offic

Office of Initial Patent Examination – Scanning Division

Application deficiencies found during scanning:

1. Application papers are not suitable for scanning and are not in compliance with 37 1.52 because:
   - ☐ All sheets must be the same size and either A4 (21 cm x 29.7 cm) or 8-1/2"x 1. Pages _____ do not meet these requirements.
   - ☐ Papers are not flexible, strong, smooth, non-shiny, durable, and white.
   - ☐ Papers are not typewritten or mechanically printed in permanent ink on one side
   - ☐ Papers contain improper margins. Each sheet must have a left margin of at least 2.5 cm (1") and top, bottom and right margins of at least 2.0 cm (3/4").
   - ☐ Papers contain hand lettering.

2. Drawings are not in compliance and were not scanned because:
   - ☐ The drawings or copy of drawings are not suitable for electronic reproduction.
   - ☐ All drawings sheets are not the same size. Pages must be either A4 (21 cm x 29. or 8-1/2" x 11".
   - ☐ Each sheet must include a top and left margin of at least 2.5 cm (1"), a right mar at least 1.5 cm (9/16") and a bottom margin of at least 1.0 cm (3/8").

3. Page(s)_____ are not of sufficient clarity, contrast and quality for electronic reproduction.

4. Page(s)_____ are missing.

5. OTHER:___**NO DECLARATION**_____